UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte Bernhard Clasbrummel, Axel Hebecker, and Joachim Hey

Appeal No. 2006-0981
Application No. 10/036,618

HEARD: April 5, 2006

Before RUGGIERO, BARRY, and MacDONALD, *Administrative Patent Judges.*
BARRY, *Administrative Patent Judge.*

A patent examiner rejected claims 1-10. The appellants appeal therefrom under 35 U.S.C. § 134(a). We affirm.

I. BACKGROUND

The invention at issue on appeal prepares an anatomical implant. Because of accident or sickness, bone tissue or bone structures must sometimes be replaced by artificial elements referred to as "implants." (Spec. at 1.) A further understanding of the invention can be achieved by reading the following claims.

1. A method for preparing an anatomical implant, comprising the steps of:

in a medical interventional [sic] procedure, intra-operatively generating a three-dimensional dataset [sic] of body tissue of a subject exhibiting a fault to be corrected by an implant from a series of two dimensional projections of the body tissue obtained from respectively different projection directions with a movable C-arm x-ray apparatus, by moving an x-ray source and a radiation receiver on a C-arm around said subject, and

in said medical interventional procedure, Intra-operatively [sic] preparing said implant adapted for introduction into said subject from said three-dimensional dataset.

7. A method as claimed in claim 1 wherein said C-arm has an orbital axis, and wherein the step of moving an x-ray source and a radiation receiver on a C-arm around said subject comprises moving said x-ray source and said radiation receiver on said C-arm through at least approximately 190° around said orbital axis.

8. A method as claimed in claim 1 wherein said C-arm has an angulation axis, and wherein the step of moving an x-ray source and a radiation receiver on a C-arm around said subject comprises moving said x-ray source and said radiation receiver on said C-arm through at least approximately 190° around said angulation axis.

Claims 1-6 stand rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,436,684 ("White") and U.S. Patent No. 6,285,902 ("Kienzle"). Claims 7-10 stand rejected under § 103(a) as obvious over White; Kienzle; and U.S. Patent No. 6,007,243 ("Ergun").

II. OPINION

Our opinion addresses the claims in the following order:

- claims 1-6
- claims 7-10.

A. CLAIMS 1-6

"[T]o assure separate review by the Board of individual claims within each group of claims subject to a common ground of rejection, an appellant's brief to the Board must contain a clear statement for each rejection: (a) asserting that the patentability of claims within the group of claims subject to this rejection do not stand or fall together, and (b) identifying which individual claim or claims within the group are separately patentable and the reasons why the examiner's rejection should not be sustained." *In re McDaniel*, 293 F.3d 1379, 1383, 63 USPQ2d 1462, 1465 (Fed. Cir. 2002) (citing 37 C.F.R. §1.192(c)(7)). "If the brief fails to meet either requirement, the Board is free to select a single claim from each group of claims subject to a common ground of rejection as representative of all claims in that group and to decide the appeal of that rejection based solely on the selected representative claim." *Id.*, 63 USPQ2d at 1465.

Here, the appellant stipulates, "The patentability of claims 1-6 stands or falls together." (Appeal Br. at 2.) We select claim 1 from the group as representative of the claims therein.

In determining obviousness, the Board conducts a two-step analysis. First, we construe the representative claim at issue to determine its scope. Second, we determine whether the construed claim would have been obvious.

1. Claim Construction

"Analysis begins with a key legal question — *what* is the invention *claimed*?" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). In answering the question, "the PTO gives claims their 'broadest reasonable interpretation.'" *In re Bigio*, 381 F.3d 1320, 1324, 72 USPQ2d 1209, 1211 (Fed. Cir. 2004) (quoting *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1668 (Fed. Cir. 2000)). "Moreover, limitations are not to be read into the claims from the specification." *In re Van Geuns*, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993) (citing *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)).

Here, claim 1 recites in pertinent part the following limitations: "in a medical interventional procedure, intra-operatively generating a three-dimensional dataset of body tissue of a subject exhibiting a fault to be corrected by an implant . . . and in said medical interventional procedure, Intra-operatively preparing said implant adapted for

introduction into said subject from three-dimensional dataset." Giving the representative claim its broadest, reasonable construction, the limitations require generating three-dimensional ("3D") data representing body tissue and using the 3D data to prepare an implant, wherein the generating and using occur during a medical intervervention.

2. Obviousness Determination

"Having determined what subject matter is being claimed, the next inquiry is whether the subject matter would have been obvious." *Ex Parte Massingill*, No. 2003-0506, 2004 WL 1646421, at *3 (Bd.Pat.App & Int. 2004). The question of obviousness is "based on underlying factual determinations including . . . what th[e] prior art teaches explicitly and inherently. . . ." *In re Zurko*, 258 F.3d 1379, 1383, 59 USPQ2d 1693, 1696 (Fed. Cir. 2001) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966); *In re Dembiczak*, 175 F.3d 994, 998, 50 USPQ 1614, 1616 (Fed. Cir. 1999); *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995)). "'A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art.'" *In re Bell*, 991 F.2d 781, 783, 26

USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)).

Here, we find that White describes a "[n]on-invasive method of forming prostheses of skeletal structures internal to a body for use in reconstructive surgery." Abs., ll. 1-3. The appellants admit, "The White reference is capable of generating *three-dimensional* data of a subject. . . ." (Reply Br. at 3.) The reference confirms the correctness of this admission by teaching that an "internal structure is measured by subjecting the body to radiant energy to produce radiant energy responses that are detected to obtain represen[ta]tions delineating the internal structure three dimensionally." Col. 2, ll. 5-9. Because White further discloses that "[a] set of three dimensional coordinates defining a three dimensional representation of the selected internal structure is generated from the obtained representations and is employed to direct a sculpting tool to form a corporeal model of the selected structure," *id.* at ll. 9-14, we find that the reference further teaches using the 3D data to prepare an implant.

The appellants argue, "The White reference is capable of generating *three-dimensional* data of a subject, but not intra-operatively." (Reply Br. at 3.) Because a surgeon implants the sculpted prostheses via "reconstructive surgery," abs., ll. 2-3, we

find that the aforementioned generating and using occur during a medical intervention that culminates in a surgical operation and that the aforementioned generating and using are performed intra-operatively.

"The presence or absence of a motivation to combine references in an obviousness determination is a pure question of fact." *In re Gartside*, 203 F3d 1305, 1316, 53 USPQ2d 1769, 1776 (Fed. Cir. 2000) (citing *In re Dembiczak*, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999)). A suggestion to combine teachings from the prior art "may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved." *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1355, 51 USPQ2d 1385, 1397 (Fed. Cir. 1999) (citing *In re Rouffet*, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998)).

Here, in White "a computerized tomographic imaging device 13 (FIG. 6) utilizing x-ray radiation is employed . . . to obtain distinguishable representations of different substances within the anatomy 11." Col. 5, ll. 51-56. The appellants admit that "C-arm x-ray systems have been used in, and are known to be suitable for use in, an operating room environment in order to generate a 3D dataset to produce an image for

monitoring the progress of a medical interventional procedure." (Appeal Br. at 8.) For its part, Kienzle discloses a "standard piece of operating room equipment ha[ving] an x-ray source 115 and an x-ray receiver 116 attached to either end of a 'C' shaped beam 113." Col. 8, ll. 22-24. The latter reference explains that "[a]djustable links on the C-arm allow the 'C' shaped beam 113 with the x-ray source 115 and x-ray receiver 116 to be oriented in a wide range of poses with respect to the patient's anatomy 101. These adjustments to the x-ray source 115 and receiver 116 include rotation about a horizontal axis parallel to the long axis of the C-arm 112 (C-arm rotation), or about a horizontal axis perpendicular to the C-arm 112 (C-arm inclination)." *Id.* at ll. 26-34. Because the use of a C-arm allows an x-ray source and an x-ray receiver to be oriented in a wide range of poses with respect to a patient's anatomy, we find that those skilled in the art would have been motivated to use a C-arm to perform x-ray 3D imaging. Therefore, we affirm the rejection of claim 1 and of claims 2-6, which fall therewith.

B. CLAIMS 7-10

Although the appellants allege, "The patentability of each of claims 7, 8, 9 and 10 stands or falls independently of any other claim on appeal," (Appeal Br. at 2), they argue claims 7 and 9 as a group and claims 8 and 10 as a group. (*Id.* at 10.) We

select claims 7 and 8 from the respective groups as representative of the claims therein.

1. Claim Construction

Claim 7 recites in pertinent part the following limitations: "said C-arm has an orbital axis, and wherein the step of moving an x-ray source and a radiation receiver on a C-arm around said subject comprises moving said x-ray source and said radiation receiver on said C-arm through at least approximately 190° around said orbital axis." Claim 8 recites in pertinent part the following limitations: "said C-arm has an angulation axis, and wherein the step of moving an x-ray source and a radiation receiver on a C-arm around said subject comprises moving said x-ray source and said radiation receiver on said C-arm through at least approximately 190° around said angulation axis." Giving the representative claims their broadest, reasonable construction, the limitations require that the aforementioned C-arm has an orbital axis or an angulation axis, respectively, around which an x-ray source and receiver can be moved approximately 190°.

2. Obviousness Determination

The appellants admit "that the Ergun et al. reference is an example of a C-arm x-ray apparatus of the type which Appellants acknowledged above to be known to those of ordinary skill in the art. . . ." (Appeal Br. at 9.) We find that the reference's "C-arm ha[s] an X-ray source and an image receptor mounted upon opposing ends to face each other along a beam axis. . . ." Col. 16, ll. 32-34. We also find that the reference's "C-arm may move in orbital rotation about an orbital axis," col. 16, ll. 36-37 and that an "end of the arm is pivotally attached to the collar such that the collar is rotatable relative to said first arm about a collar axis," *id.* at ll. 52-53, i.e., its angulation axis. Because the appellants further admit that Ergun's "C-arm apparatus [is] capable of executing the necessary range of angular movements so as to allow the acquisition of data for the production of a 3D image," (Appeal Br. at 9), and the reference discloses that its "C-arm collar 52 support[s] the arcuate C-arm 56 curving through an approximately 180 degree arc," col. 5, ll. 59-60, we further find that its x-ray source and receiver can be moved approximately 190° around the orbital axis and angulation axis.

Ergun also discloses numerous advantages to its C-arm. For example, the arm "provide[s] increased articulation in the C-arm support structure," col. 2, l. 23-24; it

"minimize[s] unintended movement of the C-arm," *id.* at ll. 36-37; it "permit[s] a reduction of size and weight of the C-arm assembly," *id.* at ll. 45-46; and it "provide[s] an additional degree of freedom of positioning of the C-arm. . . ." *Id.* at ll. 54-55. Other advantages are disclosed in columns 1 and 2 of the reference. We find that these advantages would have motivated those skilled in the art to use such a C-arm to perform 3D imaging. Therefore, we affirm the rejection of claims 7 and 8 and of claims 9 and 10, which respectively fall therewith.

III. CONCLUSION

In summary, the rejection of claims 1-10 under § 103(a) is affirmed.

"Any arguments or authorities not included in the brief will be refused consideration by the Board of Patent Appeals and Interferences. . . ." 37 C.F.R. § 1.192(a). Accordingly, our affirmance is based only on the arguments made in the briefs. Any arguments or authorities omitted therefrom are neither before us nor at issue but are considered waived. *Cf. In re Watts*, 354 F.3d 1362, 1367, 69 USPQ2d 1453, 1457 (Fed. Cir. 2004) ("[I]t is important that the applicant challenging a decision not be permitted to raise arguments on appeal that were not presented to the Board.") No time for taking any action connected with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

JOSEPH F. RUGGIERO)
Administrative Patent Judge)
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) BOARD OF PATENT
LANCE LEONARD BARRY) APPEALS
Administrative Patent Judge) AND
) INTERFERENCES
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ALLEN R MacDONALD)
Administrative Patent Judge)

SCHIFF HARDIN, LLP
PATENT DEPARTMENT
6600 SEARS TOWER
CHICAGO, IL 60606-6473